

July 23, 2018

Acting Administrator Andrew Wheeler
U.S. Environmental Protection Agency
EPA Docket Center
Docket ID No. EPA-HQ-OAR-2018-0295
Mail Code 28221T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attention: Docket ID EPA-HQ-OAR-2018-0295, "Response to Clean Air Act Section 126(b) Petitions From Delaware and Maryland"

Dear Docket Administrator:

This letter provides comments from the State of Delaware on the Environmental Protection Agency's (EPA) proposed denial of four Clean Air Act (CAA) Section 126(b) petitions submitted to EPA by Delaware, along with one 126(b) petition submitted by Maryland (83 FR 26666, June 8, 2018). These petitions were submitted to the EPA in accordance with the provisions of the CAA which are intended to provide a mechanism for a state to seek relief from air quality impacts of the emissions from "upwind" states and sources. Specifically, Delaware's petitions name four electric generating facilities in Pennsylvania and West Virginia which are significantly contributing to Delaware's nonattainment of the 2008 and 2015 8-hour ozone national ambient air quality standards (NAAQS), while Maryland's petition names 36 electric generating units in Indiana, Kentucky, Ohio, Pennsylvania, and West Virginia. The EPA proposes to deny all five petitions claiming Delaware and Maryland have not met their burden to demonstrate that the sources emit or would emit in violation of the CAA's "good neighbor" provision. The attached technical document provides evidence to support and reaffirm Delaware's 126(b) petition requests, and that EPA must approve them.

The EPA has proposed the denial of Delaware's 126(b) petitions based on the EPA's determination that the provisions of the Cross-State Air Pollution Rule Update (CSAPRU) ozone season NOx program and the existing (and predicted future) fuel gas market economics address Delaware's concerns regarding NOx emissions from the Brunner Island, Conemaugh, Harrison, and Homer City electric generating facilities at levels that significantly impact Delaware's ambient ozone and impacts Delaware's compliance with the 2015 ozone NAAQS. It is EPA's position that the provisions of the CSAPRU ozone season NOx program and the fuel market economics will result in Delaware's compliance with the 2015 8-hour ozone standard by 2023. However, 2017 and 2018 ambient ozone monitoring data in New Castle County, Delaware has shown continued ozone exceedance after the initiation of the CSAPRU ozone season program and during a period of favorable gas fuel market economics. Delaware does not agree with the EPA's analysis or EPA's proposed denial. The information and justification presented in EPA's proposed denial does not identify any provision of the CSAPRU or fuel market economics that provides positive assurance that NOx emissions from the four petitioned facilities will not significantly impact Delaware's air quality in the future. The EPA has determined that New

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Castle County Delaware is not in compliance with the 2015 ozone NAAQS. Ambient ozone measurements for the 2017 ozone season and early 2018 ozone season indicate that New Castle County Delaware is likely to remain in non-attainment with the standard. Therefore, it is Delaware's position that the EPA does not have adequate justification to deny Delaware's 126(b) petitions, and requests EPA to take action in accordance with the provisions of the Clean Air Act to help Delaware achieve compliance with the 2015 ozone standard and improve the air quality for Delaware's citizens.

Delaware appreciates this opportunity to submit these comments. Over 90 percent of the ozone concentrations negatively affecting Delaware are attributable to transported emissions, which exemplifies that Delaware is significantly impacted by EPA's actions related to transport. The deficiencies of EPA's CSAPR Update and EPA's reliance upon it to meet upwind states' good neighbor obligations and to deny downwind states' 126(b) petitions are unacceptable. Delaware's petitions are technically sound and correctly identify sources contributing to nonattainment in Delaware. Delaware seeks effective remedies by requiring the use and optimization of NOx emission controls throughout the ozone season, and enforceable fuel restrictions. Delaware requests EPA's approval of each 126(b) petition to ensure Delaware citizens are not burdened with poor air quality. Please contact me at (302) 739-9402 with any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "David Fees", with a long horizontal flourish extending to the right.

David F. Fees, P.E.
Acting Director
Division of Air Quality

cc: Cristina Fernandez, EPA Region III

Attachment

Delaware Comments Regarding the EPA Proposal to Deny Delaware's 126(b) Petitions for Brunner Island, Conemaugh, Harrison and Homer City Electric Generating Stations

For the 2008 ozone NAAQS, Delaware's Sussex County is a stand-alone nonattainment area, while New Castle County is part of the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE (Philadelphia NAA). EPA did not effectively complete this designation process until July 20, 2012, and, ultimately, an attainment date for Delaware's areas was established at July 20, 2015. The Clean Air Act (CAA) requires states to attain the ozone National Ambient Air Quality Standard (NAAQS) as expeditiously as practicable. However, states significantly impacted by ozone pollution from upwind states are unable to do so if "good neighbor" SIPs (CAA section 110(a)(2)(D)(i)) are not submitted to EPA with adequate remedies, and that those remedies are not implemented prior to the attainment deadline of the downwind nonattainment areas. The CAA recognized this since the "good neighbor" provisions are required to be addressed prior to the submission of Attainment Demonstrations by nonattainment areas. In accordance with the provisions of the CAA, Pennsylvania's and West Virginia's significant contributions for the 2008 ozone NAAQS should have been addressed by March 2011. States, including Pennsylvania and West Virginia, not only failed to adopt complete infrastructure SIPs that included good neighbor provisions, but EPA failed to issue FIPs to cure those deficiencies until it issued the Cross-State Air Pollution Rule Update (CSAPRU) on October 26, 2016—well after the attainment dates for many areas, including Delaware.

EPA should have acted in a timely manner when states like Pennsylvania and West Virginia failed to adopt good neighbor provisions. As part of that timely action, EPA should have coupled its analysis and remedy with Marginal attainment dates, as the first deadline for which nonattainment areas (NAA) had to attain the standard. EPA explained that it aligned its modeling analysis and implementation of the final CSAPRU rule (in 2017) with relevant attainment dates for Moderate nonattainment areas by choosing a date that will provide reductions for the last year before their attainment dates in 2018. While EPA obviously could not have tied its 2017 implementation of the rule to the attainment dates for Marginal nonattainment areas like Delaware which had already passed (in 2015), EPA should still have addressed the need for good neighbor reductions relative to Marginal nonattainment by aligning modeling contribution analysis for those states to some timeframe prior to their 2015 Marginal attainment deadlines. Instead, the EPA has crafted a process that completely takes place after the attainment dates of Marginal, Moderate, and Serious nonattainment areas—at which point (in 2023) EPA concludes that Delaware and all other areas outside of California do not need any reductions in upwind state emissions in order to attain and maintain the NAAQS. EPA relies

upon this flawed reasoning for justification of the denial of Delaware's 126(b) petitions, for the 2008 ozone NAAQS, as well as for the revised 2015 ozone NAAQS.

The updated 2023 modeling provided by EPA still does not provide a "full remedy" and shows that Pennsylvania and West Virginia still significantly contribute to ozone levels (defined as greater than the 1% of the NAAQS, which is 0.75 ppb for the 2008 ozone NAAQS) across Delaware between 2.1 and 10.2 ppb in 2023. Although the EPA 2023 modeling predicts attainment of the 2008 ozone NAAQS of 75 ppb in Delaware, the EPA should not (nor should any upwind state) presume Delaware (or any other state) will be attaining the 2008 ozone NAAQS in 2023. While Delaware's monitors are currently meeting the design value of the 2008 ozone NAAQS, other monitors in the Philadelphia NAA are exceeding the NAAQS (most notably the Bristol, PA monitor # 420170012 with a 2015-2017 design value of 79 ppb). Although the Philadelphia NAA has been declared by EPA to have officially attained the 2008 ozone NAAQS, the nonattainment area is currently NOT attaining the standard, as proven by the Bristol, PA monitor. The EPA should not presume that the Bristol monitor, and therefore the Philadelphia NAA, and subsequently Delaware will be attaining the 2008 ozone NAAQS by the modeled attainment date of 2023. Even if attainment of the 2008 ozone standard was assured for the Philadelphia NAA by 2023, this date for attainment is unacceptable and violates the CAA since good neighbor provisions were not required nor implemented by EPA in the prescribed timeframe defined by the CAA.

Similarly, current ambient monitoring data in Delaware for 2018 shows that three of Delaware's monitors (all in New Castle County) are exceeding the 2015 ozone NAAQS. As Delaware's New Castle County is once again tied to the same counties which make up the Philadelphia NAA for the 2008 ozone NAAQS, Delaware's attainment of the 2015 ozone NAAQS is tied to the attainment of the other monitors in the nonattainment area. For preliminary 2018 data through the middle of July, the Bristol monitor in Pennsylvania is still the design value site with a preliminary 2016-2018 of 78 ppb. The Bristol monitor's 4th highest value for 2018 is already 81 ppb (only halfway through the 3 month ozone season), which exceeds the 2008 ozone NAAQS, and is the highest in the Philadelphia NAA. In fact, three sites in the Philadelphia NAA (the Bristol and North East Airport sites in PA and the Bellefonte site in DE) have recorded 8-hour averages which exceed even the 1997 ozone NAAQS (which rounds to 84 ppb).

EPA's Use of Four-Step Process For Justification of Denial of Delaware's 126(b) Petitions

In order to help Delaware assess the impact of upwind electric generating unit (EGU) facility NOx emissions on Delaware's 8-hour average ozone exceedances in 2011, Sonoma Technologies Inc. (STI) conducted air quality modeling using the Comprehensive Air Quality

Model with extensions (CAMx) Ozone Source Apportionment Technology (OSAT). The 2011 ozone season modeling was performed to determine 8-hour average ozone apportionments from individual upwind EGU facilities and upwind groups of EGU facilities. At the time of the modeling, the 2011 ozone season was the latest ozone season for which emissions data and meteorology were readily available. The modeling identified that a number of EGU facilities individually had significantly impacted Delaware's air quality with respect to the 2008 8-hour ozone NAAQS during the 2011 ozone season. The identified EGU facilities significantly impacting Delaware's ambient air quality included Pennsylvania's Brunner Island, Conemaugh, and Homer City Generating Stations and West Virginia's Harrison Generating Station. In accordance with the provisions of section 126(b) of the CAA, Delaware submitted four petitions to the EPA to take action to prevent these four facilities from significantly impacting Delaware's ambient ozone in the future.

Delaware submitted these four 126(b) petitions to the EPA in 2016: June of 2016 for the 126(b) petition regarding the Brunner Island facility; August 2016 for the 126(b) petition regarding the Harrison facility; November 2016 for the 126(b) petition regarding the Homer City facility; and December 2016 for the 126(b) petition regarding the Conemaugh facility. The EPA failed to respond to the 126(b) petitions within the 60-day requirement specified in the CAA. Instead, the EPA granted itself a 6-month extension to analyze and respond to the petitions. EPA also failed to make a finding on the Delaware 126(b) petitions within the 6-month extension. The EPA further delayed its response to Delaware's 126(b) petitions, eventually publishing a proposed denial of all four Delaware 126(b) petitions in the June 8, 2018 Federal Register (83 FR 26666.)

In March 2017, Delaware filed a Petition for Review challenging EPA's January 23, 2017 final decision that it may grant itself a 6-month deferral pursuant to 42 U.S.C. § 7607(d)(10) to act on Delaware's 126(b) petition regarding Conemaugh Generating Station. Delaware's 126(b) petition requested that EPA make a finding that Conemaugh Generating Station's emissions contribute significantly to Delaware's nonattainment or inability to maintain attainment of the 2008 and 2015 national ambient air quality standard ("NAAQS") for ozone. Pursuant to Section 126(b), "[w]ithin 60 days after receipt of a [Section 126 petition] and after public hearing, [EPA] shall make such a finding or deny the petition."

EPA received Delaware's 126(b) petition for the Conemaugh facility on December 5, 2016. Section 126(b) required that EPA act on Delaware's petition by February 3, 2017, which is 60-days after December 5, 2016. Rather than attempt to comply with its nondiscretionary statutory obligations under Section 126(b) and § 7607(d) by starting the rulemaking process within the 60-day deadline, on January 23, 2017, 49 days after receiving the petition, EPA simply granted itself a 6-month deferral to act on Delaware's 126(b) petition. EPA's decision to grant itself a 6-month deferral to act on Delaware's Section 126 petition regarding Conemaugh Generating

Station is consistent with EPA's prior course of conduct in granting itself six-month deferrals to act on Delaware's three previously filed Section 126 petitions.

EPA published its Deferral Decision regarding Conemaugh Generating Station in the Federal Register on January 23, 2017. (PA at A38-40; 82 Fed. Reg. 7695). EPA relied on 42 U.S.C. § 7607(d)(10) (CAA Section 307(d)(10)) for the statutory authority to grant itself the six-month deferral to act on Delaware's Section 126 petition. (PA at A38-40; 82 Fed. Reg. 7695). EPA stated in its Deferral Decision:

In accordance with CAA section 307(d)(10) [42 U.S.C. § 7607(d)(10)], the EPA is determining that the 60-day period afforded by CAA section 126(b) for responding to the petition from the state of Delaware is not adequate to allow the public and the agency the opportunity to carry out the purposes of CAA section 307(d) [§ 7607(d)]. Specifically, the 60-day period is insufficient for the EPA to complete the necessary technical review, develop an adequate proposal, and allow time for notice and comment, including an opportunity for public hearing, on a proposed finding regarding whether the Conemaugh Generating Station identified in the CAA section 126 petition contributes significantly to nonattainment or interferes with maintenance of the 2008 ozone NAAQS or the 2015 ozone NAAQS in Delaware. Moreover, the 60-day period is insufficient for the EPA to review and develop response to any public comments on a proposed finding, or testimony supplied at a public hearing, and to develop and promulgate a final finding in response to the petition. The EPA is in the process of determining an appropriate schedule for action on the CAA section 126 petition. This schedule must afford the EPA adequate time to prepare a proposal that clearly elucidates the issues to facilitate public comment, and must provide adequate time for the public to comment and for the EPA to review and develop responses to those comments prior to issuing the final rule. As a result of this extension, the deadline for the EPA to act on the petition is August 3, 2017. (82 FR 7695).

42 U.S.C. § 7607(d)(10), which EPA relied on for the statutory authority to grant itself the 6-month deferral, states:

Each statutory deadline for promulgation of rules to which this subsection applies which requires promulgation less than six months after date of proposal may be extended to not more than six months after date of proposal by the Administrator upon a determination that such extension is necessary to afford the public, and the agency, adequate opportunity to carry out the purposes of [subsection 7607(d)]. (Emphasis added).

Despite Section 126(b)'s nondiscretionary deadline that EPA act on Delaware's four 126(b) petitions within 60-days of receipt of each petition, the only formal action EPA had taken on

Delaware's 126(b) petitions (until EPA's current proposal to deny all four petitions) was to grant itself the six-month deferral for each.

At the time EPA granted itself the 6-month deferral for the Conemough 126(b) petition, EPA had not announced a proposed rule in response to Delaware's 126(b) petition. The EPA still did not propose a rule after by the end of the 6 month deferred deadline of August 3, 2017. It was not until nearly a year after the deferred deadline, and over 18 months after Delaware submitted the 126(b) petition to the EPA for Conemaugh, that the EPA finally proposed to deny all of Delaware's 126(b) petitions. Delaware's petition for review was an ongoing case, in an effort to prove that the EPA was illegally using the provisions of 42 U.S.C. § 7607(d)(10) to grant itself an additional 6 months before acting upon 126(b) petitions from Delaware (and other states). EPA's proposed denial effectively made the case moot, although Delaware insists that the EPA should be held to the requirements of 126(b) and grant or deny any and all 126(b) petitions it receives within the 60 day time period as mandated by the CAA. Delaware does not consider the case moot as real harm to Delaware has taken place by delayed EPA actions to address upwind emissions that continue to significantly contribute to Delaware's nonattainment of the ozone standards and continue to impact the health of Delawareans and those that visit Delaware.

In its proposed denial of Delaware's 126(b) petitions, the EPA indicated that they utilized a four step process to evaluate the validity of Delaware's 126(b) petitions. The EPA indicated that the four step process was similar to that used in previous 126(b) analyses and also in the development of the CSAPRU ozone season NOx program. Delaware does not agree that this is the most appropriate method to evaluate the validity of submitted 126(b) petitions. This is due, in part, because EPA's use of the evaluation tool is intended for regional compliance strategies and does not properly assess or address unit/facility linkage to downwind air quality problems or the specific emission impacts on those downwind locations. Delaware also takes exception to EPA's findings related to the use of this evaluation method for Delaware's 126(b) petitions

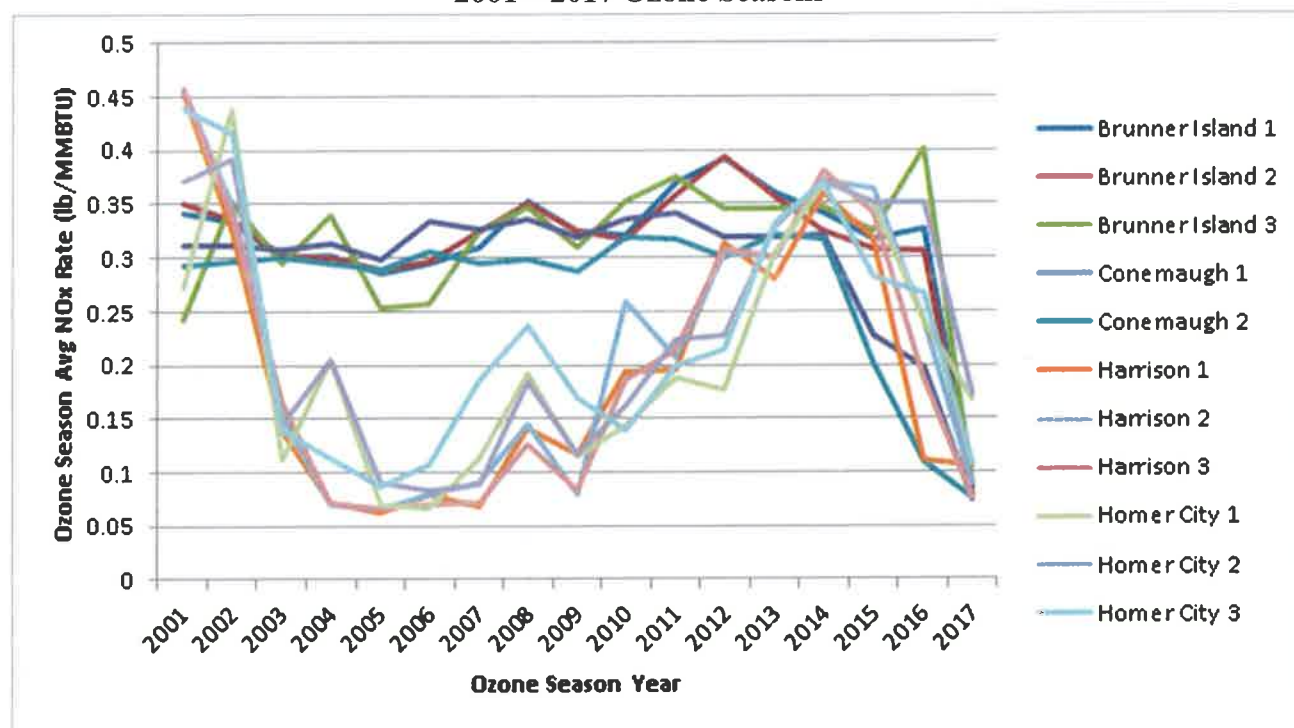
On October 1, 2015, the EPA strengthened the ground level ozone NAAQS based on extensive scientific evidence about ozone's effects on public health and welfare. The EPA has indicated that while NOx reductions achieved by the CSAPRU ozone season NOx program will aid in meeting and maintaining the 2015 ozone standard, the CSAPRU was not meant to address the CAA's "good neighbor" provision with respect to the 2015 ozone NAAQS final rule. The CSAPR ozone season NOx program is an allowance trading program that allows facility owner/operators to determine their own compliance path, including the buying, selling, and banking (saving for a future year) of allowances on the market. The rule does not require that any particular facility make specific reductions or use certain pollution controls. Under this trading program, sources have significant flexibility in deciding how to meet emission reduction

requirements. At the end of the ozone season, compliance is measured by whether they hold enough allowances to cover their actual ozone season emissions. The CSAPRU ozone season NOx program does not contain any general or unit specific NOx emission rate limits for any unit or facility subject to the rule.

The EPA has implemented similar seasonal NOx allowance trading programs in the past that similarly required compliance by holding enough allowances at the end of the season to balance the actual NOx emissions. While the CSAPRU seasonal NOx program appears to be more stringent than these predecessor programs in that the program's total NOx allowance allocation is lower than with the predecessor programs, all of the programs, including the CSAPRU, contain the same basic flexibility to achieve compliance and none of the programs require(d) any given unit or facility to make specific (or any) NOx reductions or the use of emission controls.

Under these predecessor NOx trading programs, some owner/operators chose to install selective catalytic reduction (SCR) NOx emission controls on their respective EGUs in anticipation of their economic justification and use as a compliance tool for the applicable NOx trading program. As the seasonal NOx control trading programs matured and owner operators gained more compliance experience, for whatever reason some of the owner/operators found that program compliance did not necessarily require the operation of the SCR controls for their respective units and chose to either not run those controls or to operate those controls at reduced seasonal control efficiencies. It is Delaware's opinion that there is the possibility for similar shifts in control operation for some units subject to the CSAPRU ozone season NOx program as the owner/operators gain experience in determining economic compliance strategies. The cost of allowances remain low as allowances become increasingly available due to greater use of gas fuel and renewables. Figure 1 below shows the historic average ozone season NOx emission rate for the coal-fired EGUs located at the facilities identified in Delaware's 126(b) petitions:

Figure 1
Coal-Fired EGUs at Brunner Island, Conemaugh, Harrison, and Homer City
Ozone Season Average NO_x Emission Rate
2001 – 2017 Ozone Seasons



While the chart in Figure 1 above reflects ozone season NO_x rates for all four EGU facilities identified in Delaware's 126(b) petitions, only the Conemaugh, Harrison, and Homer City EGUs are equipped with SCRs. The Brunner Island EGUs do not have installed SCRs, and its reduction in NO_x emissions after the 2016 ozone season is due to the addition and utilization of gas firing capability in addition to the existing coal-firing capability at those units.

It can be seen in Figure 1 that the EGUs with SCRs showed significant reduction in average ozone season NO_x emission rates after installation of the controls, with a general increase in average ozone season NO_x emission rates in subsequent ozone seasons. While it can only be speculated as to the reasoning for the EGU owner/operators to operate their emission controls in this manner, the most important issue is that this was acceptable operation within the compliance flexibility of the predecessor NO_x allowance trading programs. And because the CSAPRU ozone season NO_x program contains the same compliance flexibility, an owner/operator could similarly select to reduce their pollution control efforts and use the flexible allowance trading aspect for compliance for future ozone seasons. Imposition of sufficiently stringent emission rate limitations with appropriate averaging periods would prevent this situation from occurring at

EGU facilities that have been shown to significantly impact ambient ozone in downwind locations.

In its proposed denial of the Delaware 126(b) petitions, the EPA indicated that Delaware did not document that there will be future year violations of the 2015 ozone standard. The EPA indicated that they did not anticipate future violations, based on modeling conducted in the development of the CSAPRU ozone season program (that indicated the 2017 base average and maximum ozone design values would be below the ozone NAAQS) and actual emissions data observed for the latest full ozone season, 2017. This information is documented in “*Air Quality Modeling Technical Support Document for the Final Cross State Air Pollution Rule Update*” (https://www.epa.gov/sites/production/files/2017-5/final_csapr_update_ozone_design_values_contributions_all_sites.xlsx). EPA indicated that Delaware’s 126(b) petitions failed the EPA screening process in that EPA did not identify any Delaware locations that were expected to have problems meeting or maintaining ozone standards after implementation of the CSAPRU ozone season NO_x program.

However, the EPA has designated New Castle County, Delaware, as nonattainment with regard to the 2015 8-hour ozone NAAQS, indicating that EPA is in possession of information that lead the EPA to make such a designation. As an indication that this nonattainment designation is appropriate and is likely to exist into the future, during the 2017 ozone season monitors in New Castle County continued to measure ambient ozone at levels exceeding the 2015 ozone standard. This may be an indication that EPA was overly optimistic concerning the impact of the CSAPRU on ambient air quality at any particular downwind location. The relevant 2017 New Castle County ambient ozone data is included in Table 1 below:

Table 1
Delaware BCSP Monitor Ozone Design Values

Agency	Site Name	AQS Code	Fourth Highest (ppm)				Design Values (ppm)	
			2014	2015	2016	2017	2014-16	2015-17
DE1	BCSP	100031010	0.074	0.071	0.078	0.074	0.074	0.074

Additionally, preliminary 2018 ozone season data from Delaware’s monitors indicates that 2018 ozone season design values may also exceed the 2015 ozone NAAQS. Through July 11, 2018, Delaware has experienced 8 days of exceedance of the 2015 ozone NAAQS, but no individual site has exceeded the 2015 NAAQS on each of those days. To date, ozone monitors at the MLK, Lums, and Bellefonte locations have each measured 4 days exceeding the 2015 ozone NAAQS. Ambient monitoring data indicates the 2008 ozone NAAQS was exceeded on two separate days (6/18/18 and 7/10/18). Of additional concern is that on July 10, 2018 ambient ozone was measured at the Bellefonte site at 85ppb, exceeding the 1997 ozone NAAQS (which was effectively 84ppb).

As the EPA has designated New Castle County as nonattainment with the 2015 ozone NAAQS, and data from Delaware's monitors continue to record ambient ozone levels that would tend to extend New Castle County's non-compliance designation, Delaware feels that the EPA's position that the CSAPRU and non-regulatory conditions address Delaware's ambient ozone problems is inappropriate. Further, this information clearly supports that Delaware has, and will continue to have, difficulty in attaining the 2015 ozone standard, and as such provides the EPA justification to take action to protect the health and welfare of Delaware's citizens in accordance with the provisions of the Clean Air Act.

During the development of the CSAPRU, the EPA performed modeling to predict ozone design values at downwind receptors and ozone contributions from upwind states. This data file is included as part of the "*Air Quality Modeling Technical Support Document for the Final Cross State Air Pollution Rule Update*" (https://www.epa.gov/sites/production/files/2017-5/final_csapr_update_ozone_design_values_contributions_all_sites.xlsx). In the fall of 2017, the EPA provided an updated set of modeling results for the CSAPRU based upon an attainment year of 2023 (https://www.epa.gov/sites/production/files/2018-05/updated_2023_modeling_dvs_collective_contributions.xlsx). While the EPA's modeling data file does not indicate 2017 ambient ozone levels in excess of the 2015 ozone standard at Delaware monitors, it does provide an indication of the contribution of upwind states to Delaware's ambient ozone.

Two of the states that have significant levels of contribution to Delaware's ambient ozone are Pennsylvania and West Virginia. These are the two states where the EGU facilities identified in Delaware's 126(b) petitions are located (Brunner Island, Conemaugh, and Homer City in Pennsylvania and Harrison in West Virginia). The modeled impact from Pennsylvania and West Virginia on New Castle County, Delaware monitoring locations are shown in Table 2 below:

Table 2
2017 and 2023 Modeled Design Values for Delaware,
Including Contributions from Pennsylvania and West Virginia

Monitor ID	State	County	2009-2013 Base Period Average Design Value	2009-2013 Base Period Maximum Design Value	2017 Base Case Average Design Value	2017 Base Case Maximum Design Value	2017 Contribution from PA	2017 Contribution from WV	2023 Base Case Average Design Value	2023 Base Case Maximum Design Value	2023 Contribution from PA	2023 Contribution from WV
100031007	Delaware	New Castle	76.3	80	63.7	66.8	4.74	2.63	59.2	62.0	5.69	2.21
100031010	Delaware	New Castle	78.0	78	66.2	66.2	13.43	2.78	61.2	61.2	10.19	2.20
100031013	Delaware	New Castle	77.7	80	65.9	67.8	7.86	3.17	60.8	62.6	7.93	2.19

EPA's modeling data clearly indicates that both Pennsylvania and West Virginia are still predicted to have the potential for significant impact on Delaware's ambient ozone even after the effective date of the CSAPRU. Given that New Castle County continues to experience ambient ozone at levels in excess of the 2015 ozone standard, it seems likely that both Pennsylvania and West Virginia are "linked" to Delaware and its difficulties in attaining the 2015 ozone standard. To the extent that Pennsylvania and West Virginia are "linked" to Delaware's nonattainment of the 2015 ozone standard, it would seem appropriate that EPA examine sources in Pennsylvania and West Virginia to determine the levels of NOx emissions that contribute to Delaware's nonattainment of the 2015 ozone standard.

In its proposed denial of Delaware's 126(b) petitions, the EPA discussed the overall NOx emissions budget for each subject state being the result of NOx emissions reduction as a result of the application of highly effective NOx controls on EGUs in those states. The resulting impact on downwind air quality was assessed by modeling performed by EPA, which predicted that Delaware would reach attainment of the 2015 ozone NAAQS by 2023 (which is very problematic since 2023 is two years BEYOND Delaware's 2021 attainment date). However, the EPA modeling was performed using statewide emissions assuming the application of the "highly cost effective" NOx controls on the units for which the "highly cost effective" criteria was assessed. But in reality, the NOx emissions from any given EGU unit/facility/state in compliance with the CSAPRU ozone season NOx program is limited only by the ability of that unit/facility/state to obtain sufficient allowances to balance out the actual emissions. These NOx reductions on a regional level ignore the emissions/atmospheric conditions relationship that may be critical at any given time to downwind air quality impact.

The CSAPRU ozone season NOx program includes allowance trading aspects that allows facility owner/operators the flexibility to determine their own compliance path, including the buying, selling, and banking (saving for a future year) of allowances on the market. The CSAPRU ozone season NOx program does not require that any particular facility make specific reductions or use certain pollution controls at any time. Under the CSAPRU ozone season NOx program, sources have significant flexibility in deciding how to meet emission reduction requirements. At the end of the ozone season, compliance is measured by whether they hold enough allowances to cover their emissions. Because the CSAPRU seasonal NOx program does not require the control of NOx emissions from any particular unit/facility, the CSAPRU seasonal NOx program has no certain influence on the NOx emissions from upwind NOx emitting EGU sources.

Because the EPA's analysis associated with the CSAPRU seasonal NOx program predicted that Delaware would attain the 2015 ozone NAAQS by 2023, the EPA concluded that no further NOx emission reductions were required from EGU sources in upwind states. EPA further justified this position indicating after the assumption of application of highly cost effective control, any requirement for additional controls or reductions would unfairly impact those affected EGUs. However, it is Delaware's assertion that the weight of required NOx reductions should be on those units/facilities that have been shown to significantly impact downwind locations. By requiring controls or restrictions on units/facilities that are specifically known to have the potential for significant impact, units that have little or no impact on downwind locations will not be unfairly required to control NOx emissions or otherwise participate in a NOx control program.

Additionally, Delaware does not agree that the existence of highly effective NOx controls and compliance with a regional trading program exemplifies a well-controlled source. As the EPA assessment of a cost effective emission control is evaluated in terms of the combined capital and operation and maintenance (O&M) cost per ton of NOx removed, the cost effectiveness of an installed NOx control that is not operated is infinite. In order for an emissions control device to be highly cost effective, that control has to have been properly designed and installed, and those controls must be operated at any time technically feasible and using good pollution control O&M practices. Operation within a regional trading program provides the owner/operator the flexibility to operate the NOx controls as convenient (off, on, anywhere in between) at any given time and at the owner/operator's discretion. Sufficiently stringent NOx emission rate limitations along with averaging periods reflective of the applicable compliance standards are both part of highly effective control technologies. Therefore, Delaware is not suggesting application of additional control at the facilities addressed in the 126(b) petitions, but rather ensuring that the existing controls are operated in a highly cost-effective manner.

In its proposed denial of Delaware's 126(b) petitions, the EPA noted, "Thus, the EPA also believes it is reasonable and appropriate at each step to consider whether the facility "emits or would emit" in light of the facility's current operating conditions. Therefore, the EPA interprets the phrase "emits or would emit" in the context of acting on Delaware's and Maryland's petitions regarding the 2008 and 2015 ozone NAAQS to mean that a source may "emit" in violation of the good neighbor provision if, based on current emissions levels, the upwind state contributes to downwind air quality problems (i.e., steps one and two), and the source may be further controlled through implementation of highly cost-effective controls (i.e., step 3)."

Delaware does not agree with the EPA's statement "...regarding the 2008 and 2015 ozone NAAQS to mean that a source may "emit" in violation of the good neighbor provision if, based on current emission levels, the upwind state contributes to downwind air quality problems....and the source may be further controlled through implementation of highly cost-effective controls...". Current emission levels, at any given time period, may or may not be representative of the potential emissions that the unit or facility is capable of emitting given physical and regulatory constraints. As discussed earlier, emission control based on compliance with a market based, flexible allowance trading program does not provide any hard cap on a unit or facility's emissions. Because there are no hard limits on short term emissions associated with the CSAPRU ozone season NOx program, subject units have the regulatory ability to emit at their maximum potential at virtually any time. Therefore, if a state or facility are shown to have had significant impact on a downwind location that is not in attainment with an applicable air quality standard, it must be assumed that under some circumstances, and in compliance with the CSAPRU ozone season NOx program, those entities can have similar significant downwind impact in the future.

With regard to the reference, "...and the source may be further controlled through implementation of highly cost-effective controls...", Delaware does not agree that the existence of the controls, and EPA's assumption that the controls will be operated, is representative of implementation of highly cost effective controls. As discussed earlier, it is Delaware's position that for existing controls to be highly cost-effective, they must be maintained and operated in accordance with good pollution control practices whenever feasible. As historic data from the Air Markets Program Data (AMPD) database demonstrates, owner/operators of SCR equipped EGUs may choose to not always operate existing controls in accordance with good operating practices when they are only subject to seasonal allowance trading programs that do not include stringent NOx emission rate limitations and appropriately short averaging periods. EPA's CSAPRU ozone season NOx program, while reducing the number of available allowances relative to predecessor NOx allowance trading program, still lacks stringent emission rate limits with appropriate averaging periods to be supportive of downwind compliance with the 2015

ozone NAAQS. Without emission rate limitations and appropriate averaging periods that ensure that the EGU owner/operators operate their SCR controls whenever technically feasible and in accordance with good pollution control practices, from a regulatory standpoint those controls cannot be considered “highly cost-effective”.

Because the intent of the EPA’s 4-step process is to support the development of a means to reduce upwind emissions via regional emissions allowance trading programs, the process intentionally ignores the linkage and impact of specific upwind units/facilities on the ambient air quality at downwind locations. Delaware does not agree that it is appropriate to rely on a regional trading program to address the requirement to ensure that specific upwind sources do not significantly impact any particular downwind location. A regional trading program with flexible compliance provisions, by design, ensures that there is no certainty of the emissions from any given source at any time. This also results in the uncertainty that the health and welfare of Delaware’s citizens are being adequately protected at all times.

EPA Contends the CSAPRU Ozone Season Program and Fuel Market Economics Address Delaware’s 126(b) Petition Concerns

In 2016, Delaware submitted four 126(b) petitions to the EPA requesting that EPA take action to prohibit the Brunner Island, Conemaugh, Harrison, and Homer City electric generating facilities from emitting NO_x at rates that significantly impact Delaware’s ambient ozone and ability to attain the 2015 8-hour ozone National Ambient Air Quality Standard. In 2018, the EPA has proposed to deny all four of Delaware’s 126(b) petitions. The EPA is basing its proposed denial, in part, on the belief that existing regulatory initiatives and fuel market economic forces address the concerns Delaware expressed in its 126(b) petitions.

Regarding Delaware’s 126(b) petition identifying Brunner Island as significantly impacting Delaware’s ambient ozone, EPA notes that Brunner Island has installed natural gas firing capabilities and is currently operating primarily using natural gas fuel. EPA states that they expect Brunner Island to continue operating with natural gas in the future as a result of fuel market forces that make gas an economic boiler fuel now and into the near foreseeable future. Therefore, the EPA finds that there are no additional cost-effective and feasible controls available for NO_x control at Brunner Island. Delaware noted in its 126(b) petition that there are no regulatory requirements for Brunner Island to fire gas fuel at any particular time, so that it is feasible that the facility could operate with NO_x emissions at levels shown by computer modeling to significantly impact Delaware’s ambient air quality.

Regarding Delaware's 126(b) petitions for the Conemaugh, Harrison, and Homer City electric generating facilities, the EPA noted that all of the coal-fired EGUs at these facilities already have SCR controls installed. The EPA established what they considered cost-effective CSAPRU ozone season NOx program allowance totals and allocations, in part, based on coal-fired EGUs operating their SCR controls. As all of the coal-fired EGUs at the Conemaugh, Harrison, and Homer City electric generating facilities have existing SCRs, EPA indicates that through promulgation of the CSAPRU ozone season NOx program the EPA has already implemented the appropriate control strategy for those facilities. Delaware noted in its 126(b) petitions for the Conemaugh, Harrison, and Homer City facilities that compliance with the CSAPRU seasonal NOx program requires only that the subject facility surrender sufficient allowance to balance actual emissions during the true-up period and that the CSAPRU seasonal NOx program does not actually prohibit at any time the subject facility from emitting NOx at levels shown by computer modeling to significantly impact Delaware's ambient air quality.

The following sub-sections provide additional detail and discussion regarding Delaware's comments relative to EPA's reliance on the CSAPRU ozone season NOx program and fuel market economic forces to deny Delaware's 126(b) petitions.

Brunner Island's 2017 Ozone Season NOx Emissions Data Do Not Demonstrate Compliance with CAA Good Neighbor Provisions

In its proposed denial of the 126(b) petition regarding the Brunner Island facility, the EPA indicated, "Brunner Island completed construction of a natural gas pipeline connection prior to the beginning of the 2017 ozone season (*i.e.*, by May 1, 2017) and operated primarily using natural gas as fuel for the 2017 ozone season. As a result, Brunner Island's actual ozone season NOx emissions declined from 3,765 tons in 2016 to 877 tons in 2017, and the facility's ozone season NOx emissions rate declined from 0.370 lbs/mmBtu in 2016 to 0.090 lbs/mmBtu in 2017. Thus, Brunner Island has already implemented the emissions reductions consistent with what Delaware asserted would qualify as a cost-effective strategy for reducing NOx emissions. Accordingly, the EPA has determined that Delaware's CAA section 126(b) petition does not demonstrate that, at this current level of emissions, Brunner Island emits in violation of the good neighbor provision."

The EPA points to the economic advantage of converting to natural gas at the Brunner Island facility, due to the economic value of the need to surrender a smaller number of allowances (resulting from the use of a lower NOx-emitting fuel) and the lower cost of gas fuel (relative to coal fuel). The EPA indicates that this fuel-market economic incentive, not tied to any regulatory incentive, will continue to support Brunner Island's primarily burning natural gas in future ozone seasons through at least 2023.

In its statement, the EPA misrepresents what Delaware believes could be considered a cost-effective strategy for reducing NOx emissions at Brunner Island. While Delaware noted in its 126(b) petition that

the Brunner Island owner/operator had planned, at that time, to install gas firing capability to all of the coal-fired EGUs at the facility, Delaware pointed out that the gas conversion alone was insufficient to address Brunner Island's ability to negatively impact downwind ambient air quality. It is Delaware's position that any acceptable NOx reduction strategy is more than the application of a NOx control technology. An effective strategy for the reduction of NOx emissions includes the applicable control technology (fuel switch capability, combustion control, etc.) and the operation and maintenance of the control technology in accordance with good pollution control practices. Installation of a gas pipeline and gas fuel-firing capability, while the facility retains the capability to fire coal and there is no regulatory provision to prohibit the firing of coal, does not ensure that the control technology is operated at all times to benefit air quality. Therefore, the addition of gas firing capability at the Brunner Island facility does not reduce the potential future short term NOx mass emissions that are critical to downwind 8-hour ozone NAAQS compliance.

The EPA notes that the Brunner Island facility's ozone season NOx emission average rate declined from 0.370 lb/MMBTU during the 2016 ozone season to 0.090 lb/MMBTU during the 2017 ozone season, and that this reduction in NOx emissions is a result of the facility's addition of gas firing capability. While Delaware agrees that this demonstrates a seasonal reduction in NOx emissions, Delaware continues to believe that this seasonal reduction does not indicate that the Brunner Island facility no longer emits, or could emit, NOx emissions at levels that are in violation of the good neighbor provision. A review of the 2017 ozone season Brunner Island facility NOx mass emissions data found in the AMPD, it can be seen that the Brunner Island facility at times had NOx mass emissions similar to the values demonstrated in the STI modeling to have the capability of having significant impact on Delaware's ambient ozone at Delaware ozone monitors. The following table summarizes some of the relevant data from the EPA's AMPD database:

Table 3
Brunner Island Facility NOx Emissions Comparison
Modeled Date of Significant Impact on Delaware Ambient Ozone (9/13/2011) and the 2017
Ozone Season

Facility	Modeled Date of Significant Contribution	Significant Contribution	2017 Ozone Season Peak	Significant Contribution	2017 OS Peak Hourly NOx Mass Emissions	Number of Hours in 2017 Ozone Season with Hourly NOx Mass Emissions Higher than Significant Contribution Day Peak NOx Mass Emissions	Significant Contribution	2017 OS Highest Total 8-hr NOx Mass Emissions	Number of 8-Hour Periods in 2017 Ozone Season with 8-Hour NOx Mass Emissions Higher than Significant Contribution Day Peak 8-Hour NOx Mass Emissions
		Date Daily NOx Mass Emissions (lb)	Date Daily NOx Mass Emissions (lb)	Date Peak Hourly NOx Mass Emissions (lb)	Peak Hourly NOx Mass Emissions (lb)		Date Highest Total 8-hr NOx Mass Emissions (lb)		
Brunner Island	9/13/2011	54797	57784	2654	2893	15	21000	22463	11

It can be seen in Table 3 above that there were periods during the 2017 ozone season when the Brunner Island facility's NOx mass emissions were at levels demonstrated by the STI modeling to have the ability to significantly impact Delaware's ambient ozone NAAQS compliance. The data summary in the table shows that during the 2017 ozone season, there was one calendar day where the Brunner Island's daily total NOx mass emissions exceeded the daily NOx mass emissions of the date the STI modeling demonstrated had significant impact on Delaware's ambient ozone. The data summary in the above table also shows that during the 2017 ozone season, the Brunner Island facility had 15 hours of hourly NOx mass emissions higher than the peak hourly NOx mass emissions of the date the STI modeling demonstrated Brunner Island's ambient ozone impacts, and the Brunner Island facility also had 11 periods of 8-hour average ozone mass emissions in excess of the highest value on the date the STI modeling demonstrated Brunner Island's significant impact on Delaware's ambient ozone.

These data demonstrate that even after Brunner Island's installation of natural gas fuel firing capability and a significant reduction in the facility's overall seasonal NOx emission rate, the Brunner Island facility has still demonstrated short term (daily/hourly/8-hour average) NOx mass emissions at levels that have been shown by modeling to have the potential to significantly impact Delaware's ambient ozone and its compliance with the 2015 ozone NAAQS. This information directly opposes EPA's position that Brunner Island's NOx emissions at the 2017 ozone season levels do not violate the good neighbor provisions of the Clean Air Act. In fact, it is Delaware's position that the Brunner Island's 2017 ozone season AMPD data demonstrates the need for regulatory control to ensure that short term NOx mass emission limitations are in place to prevent Brunner Island from continuing to violate the good neighbor provisions of the Clean Air Act.

The EPA also contends that fuel market conditions will tend to ensure that the Brunner Island facility will predominately fire gas into the future, stating, "The capital expenditure to construct a natural gas pipeline connection suggests that natural gas prices within this range make it economic (*i.e.*, cheaper) for Brunner Island to burn natural gas to generate electricity relative to burning coal. As such, future natural gas prices in this same range suggest that Brunner Island will continue to primarily burn natural gas during future ozone seasons." The EPA utilizes future fuel cost projections, that predict continued favorable gas fuel prices for a number of future years, to predict that Brunner Island will continue the predominate utilization of gas into the future. But as shown above, the current fuel market conditions did not prevent Brunner Island from operating during the 2017 ozone season at NOx mass emission values similar to those shown by modeling to significantly impact Delaware's ambient ozone. Additionally, Delaware is not aware of the regulatory provisions that facilitate the utilization of fuel market

conditions as a compliance methodology to ensure a facility meets its good neighbor obligations.

Delaware believes it is inappropriate for a regulatory process to rely on uncontrolled fuel market economics to protect the health and welfare of Delaware's citizens.

EPA's Indication that an Ozone Season Average NOx Emission Rate Of 0.2 lb/MMBTU Indicates Likely Operation of SCR throughout The Ozone Season

In its proposed denial of Delaware's 126(b) petitions, EPA stated, " The EPA analyzed ozone-season emissions rates from all coal-fired units in the contiguous U.S. equipped with SCR and found that, based on 2017 emissions data reflecting implementation of the CSAPR Update, 260 of 274 units had ozone-season emissions rates below 0.2 lb/mmBtu, indicating they were likely operating their post-combustion controls throughout the ozone season, including every unit with SCR named in Delaware's and Maryland's petitions."

Delaware does not agree that an average ozone season NOx emission rate of 0.2 lb/MMBTU is representative of SCR operation in accordance with good pollution control practices throughout the ozone season. A review of the EPA's 2017 ozone season AMPD data for SCR equipped coal-fired EGUs and subject to the CSAPRU season NOx program indicated a range of ozone season average NOx emission rates from 0.0313 lb/MMBTU to 0.2856 lb/MMBTU, with an average of all the values of 0.0944 lb/MMBTU and a median value of 0.0782 lb/MMBTU. This information would seem to indicate that the EPA's assumption that a seasonal average NOx emission rate of 0.2 lb/MMBTU is representative of operation of SCR throughout the ozone season is incorrect. Additionally, it is Delaware's opinion that a seasonal average NOx emission rate of 0.2 lb/MMBTU, or greater, is certainly not representative of operation of SCR controls in accordance with good pollution control practices throughout the ozone season.

It is also interesting to note that in its *Technical Support Document (TSD) for the Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS* (at https://www.epa.gov/sites/production/files/2017-05/documents/ozone_transport_policy_analysis_final_rule_tsd.pdf), the EPA noted, "Units equipped with SCRs with an emissions rate exceeding 0.20 lbs/mmBtu were considered to have idled SCRs." In this same document the EPA referred to a NOx emission rate of 0.081 lb/MMBTU for SCR equipped coal-fired EGUs as "widely achievable".

But the most significant aspect is that even with the actual relatively low 2017 ozone season average NOx emission rates, the 2017 AMPD ozone season data indicates that there were many units that operated for short times in excess of the EPA's suggested 0.2 lb/MMBTU point. In

reviewing the 2017 ozone season daily NO_x emission rate data for SCR equipped coal-fired EGUs subject to the CSAPRU seasonal NO_x program, it can be seen that there were approximately 1400 unit-days (spread among units located in 15 states) where the daily average NO_x emission rate was 0.2 lb/MMBTU or greater. The same data indicated that there were nearly 400 unit-days where the daily average NO_x emission rate was 0.3 lb/MMBTU or greater (spread among units located in 11 states). It should be pointed out that all of those values represent units that were reported to have operated the entire 24-hours of the counted day, and this selection criterion was utilized to eliminate or minimize the impact of any startup emission rate that may have been more prevalent for units operating less than 24 hours of the counted day. In this instance, it would appear that the CSAPRU seasonal NO_x program does not ensure all owner/operators of subject units operate their emission controls at all time in accordance with good pollution control practices.

This is an indication that a cap-and-trade programs with seasonal compliance provisions do not prevent a unit or facility from operating within regulatory requirements for some duration of time where the NO_x emissions from the unit or facility can significantly impact a downwind location's ability to be in compliance with a short term NAAQS, such as an 8-hour ozone standard, and thereby endanger the health and welfare of citizens in downwind locations. The addition of short term NO_x emission rate limits of appropriate stringency and with averaging periods more closely related to the exceedance criteria of the applicable standard are necessary to ensure upwind sources do not significantly impact downwind air quality.

EPA Dismisses Potential for Intermittent Operation of NO_x Controls When Economically Advantageous

In its 126(b) petitions to the EPA, Delaware discussed the potential for economic conditions when the owner/operator of a coal-fired SCR equipped EGU might find it advantageous to reduce or eliminate the operation of SCR controls for short periods that could potentially coincide with atmospheric conditions conducive to ozone generation, and under the provisions of the CSAPRU ozone season program this would be acceptable providing the owner/operator surrenders sufficient allowances to cover the emissions. For example, in Delaware's 126(b) petition for the Conemaugh electric generating facility, Delaware mentioned that there are multiple reasons an owner/operator may find it advantageous to operate without SCR controls in-service, including operational issues and equipment failures. In the Conemaugh 126(b) petition Delaware noted, *"There are a number of conditions that could occur during the operation of a large EGU facility where a facility owner/operator may find it advantageous to operate (or continue operation) for a limited period of time with the SCR NO_x emission controls out of service or operating at low efficiency levels. This assumes that the owner/operator has the ability to comply with NO_x emissions caps by acquiring the sufficient allowances and can meet long*

term NOx emission rate limits through utilization of averaging provisions. Problems with the SCR (including damage, pluggage, etc), SCR ancillary support systems and controls, and boiler draft systems could impact the EGU operation to the point that the SCR must be taken out of service in order to continue EGU operation at load. There may also be some economic incentive to continue operation in this manner, as the economic impact of taking a forced outage (and associated fees) and/or replacement power costs could make the purchase of additional NOx compliance allowances a relative bargain.”

In its proposed denial of Delaware’s 126(b) petitions, the EPA stated, “*To the extent the petitions have alleged that short-term limits are necessary to prevent units from turning controls off intermittently on days with high ozone, the EPA examined the hourly NOX emissions data reported to the EPA and did not observe many instances of units selectively turning down or turning off their emissions control equipment during hours with high generation.*”⁵⁰ SCR-controlled units generally operated with lower emissions rates on high generation hours, suggesting SCRs generally were in better operating condition—not worse, let alone idling—on those days/hours. In other words, the EPA compared NOX rates on hours with high demand and compared them with seasonal average NOX rates and found very little difference. The data do not support the notion that units are reducing SCR operation on high demand days to harvest additional power that would otherwise be exhausted on control operation.” While the EPA’s statement only addresses one specific potential economic justification for deciding to operate the EGU with SCR controls out of service (or in partial service), the EPA’s point does address the overall bottom line consideration; that consideration being the CSAPRU ozone season NOx program’s intended flexibility to allow the owner/operator the choice to operate NOx controls at any given period of time.

The EPA has itself pointed out the CSAPRU program’s design flexibility to allow an EGU owner/operator the decision to install/not install and operate/not operate NOx controls at will provided that the owner /operator has a sufficient number of allowances to be surrendered to balance the emissions during the true-up period. In its CSAPRU fact sheet, the EPA indicated, “*The CSAPR allowance trading program allows facility owner/operators to determine their own compliance path, including the buying, selling, and banking (saving for a future year) of allowances on the market. The rule does not require that any particular facility make specific reductions or use certain pollution controls. Under a trading program, sources have significant flexibility in deciding how to meet emission reduction requirements. At the end of the ozone season, compliance is measured by whether they hold enough allowances to cover their emissions.*”

So while in the EPA’s proposed denial of Delaware’s 126(b) petitions the EPA indicates that there were not many instances during the 2017 ozone season where it could be seen that units selectively turned down or turned off controls, the EPA has previously indicated that turning

down or turning off controls at any given time is an acceptable compliance strategy within the provisions of the CSAPRU ozone season NOx program. Therefore, EPA's indication that they did not find many examples of NOx controls being selectively turned down or turned off during the 2017 ozone season is not a valid indication that such practice is not a potential problem as it remains part of an acceptable compliance path. And as the CSAPRU indiscriminately gives any EGU owner/operator the same control installation/operation flexibility, the provisions of the CSAPRU also provide the same NOx control installation/operation flexibility to an EGU or EGU facility that significantly impacts the ability of a downwind location to meet ambient air quality NAAQS.

Therefore, Delaware cannot agree that the fact that the EPA "*did not observe many instances of units selectively turning down or turning off their emissions control equipment during hours with high generation*" is an indication that any EGU owner/operator will not turn down or turn off NOx controls when it is advantageous for them to do so, potentially including units and facilities that can significantly impact Delaware's compliance with the 2015 ozone NAAQS.

Short Term Operation of SCR Controls at Conemaugh, Harrison, and Homer City during the 2017 Ozone Season

In its 126(b) petitions regarding the Conemaugh, Harrison, and Homer City EGU facilities, Delaware stated that the NOx mass emission limits provided for in the CSAPRU are ineffective in properly protecting the public health and welfare in downwind states at all times with regards to the 2015 8-hour ozone NAAQS. This is due, in part, to the fact that the provisions of the CSAPRU do not provide any limitations on the Conemaugh, Harrison, and Homer City EGU's NOx mass emissions for any period shorter than seasonal. The lack of sufficiently stringent short term NOx emission rates facilitates the regulatory acceptable continued operation of the Conemaugh, Harrison, and Homer City coal-fired, SCR equipped EGUs with inadequate NOx emission control operation which can result in high NOx emissions over short periods of time (or, as high a total NOx emissions as can be compensated for through the surrender of compliance allowances). This can facilitate the Conemaugh, Harrison, and Homer City EGUs to continue operation at NOx emission levels that reflect significant impact on Delaware's ability to attain the 2015 8-hour ozone NAAQS while those units remain in compliance with the CSAPRU.

In its proposed denial, the EPA cites 2017 emissions data as an indication that the Conemaugh, Harrison, and Homer City EGU facilities no longer emit at levels that can significantly impact Delaware's compliance with the 8-hour ozone standard. In the denial, EPA discusses that an ozone season average NOx emission rate below 0.2 lb/MMBTU was an indication that the EGU was likely operating the existing SCR post-combustion NOx controls throughout the ozone

season. The EPA went on to say in the proposed denial, “Consequently, the EPA finds that the named units are consistently operating their SCRs throughout the season.”

Delaware does not agree that a seasonal NOx emission rate average of 0.2 lb/MMBTU is representative of full season operation of SCR controls in accordance with good pollution control practices. And in its *Technical Support Document (TSD) for the Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS* the EPA apparently agreed, stating, “Units equipped with SCRs with an emissions rate exceeding 0.20 lbs/mmBtu were considered to have idled SCRs.” In this same *Cross-State Air Pollution Rule Update TSD*, the EPA referred to a NOx emission rate of 0.081 lb/MMBTU for SCR equipped coal-fired EGUs as “widely achievable”.

Data for the following table was accessed from the EPA’s AMPD for the 2017 ozone season. Table 4 below shows the 2017 ozone season average NOx emission rate for the coal-fired, SCR-equipped EGUs located at the Conemaugh, Homer City, and Harrison electric generating stations:

Table 4
Conemaugh-Homer City-Harrison Coal Fired EGUs
2017 Ozone Season Average NOx Emission Rates

Facility	Unit	2017 Ozone Season Avg. NOx Rate (lb/MMBtu)
Conemaugh	1	0.0742
Conemaugh	2	0.0764
Homer City	1	0.1667
Homer City	2	0.1731
Homer City	3	0.1084
Harrison	1	0.1062
Harrison	2	0.0885
Harrison	3	0.0761

If using the EPA’s criteria that an overall seasonal average NOx emission rate of 0.2 lb/MMBTU demonstrates consistent operation of SCR controls over the season, the data in Table 4 above would seem to indicate that all of the Conemaugh, Harrison, and Homer City coal-fired, SCR-equipped EGU’s operated their controls consistently throughout the 2017 ozone season. However, if shorter term NOx emission rate data is evaluated, it appears that the SCR controls do not appear to have been operated in accordance with good pollution control practices at all times the units were operating.

To better evaluate the NO_x control performance of the subject units during the 2017 ozone season, daily NO_x emission rate data was accessed from the EPA's AMPD for the 2017 ozone season for the Conemaugh, Homer City, and Harrison coal-fired, SCR-equipped EGUs. The data collected from the AMPD was limited to 2017 ozone season days where the subject unit was reported to have operated the entire 24-hours of the counted day. This selection criterion was utilized to eliminate or minimize the impact of any startup emission rates that may have been more prevalent for units operating less than 24 hours of the counted day. Table 5 below shows a count of the number of 2017 ozone season unit operating days with a daily average NO_x emission rate of 0.2 or greater for each of the Conemaugh, Harrison, and Homer City coal-fired and SCR-equipped EGUs:

Table 5
Conemaugh-Homer City-Harrison Coal Fired and SCR Equipped EGUs
Count of 2017 Ozone Season Days with Daily Average NO_x Rate of 0.2 lb/MMBTU or
Greater
Counted Days Only For Days with 24-hours of Operation

Facility	Unit	2017 Ozone Season Unit-Days with 24- hour Operation and Average NO _x Rate 0.20 lb/MMBTU or Greater
		Greater
Conemaugh	1	0
Conemaugh	2	0
Harrison	1	2
Harrison	2	0
Harrison	3	1
Homer City	1	15
Homer City	2	8
Homer City	3	1

It can be seen from the data in Table 5 that the CSAPRU ozone season NO_x cap-and-trade program did not provide sufficient incentive for some of the units to operate with daily average NO_x emission rates of 0.2 lb/MMBTU or lower throughout the 2017 ozone season.

In order to be protective of short term air quality standards, in its 126(b) petitions Delaware stated that it is necessary to establish emissions limits with appropriate magnitudes and averaging periods that ensure that the NO_x emissions are adequately controlled during any particular time period. It is Delaware's assertion that selection of a short term NO_x emission rate limit averaging period of no greater than 24 hours is also appropriate to address the short term

aspects of compliance with a short term NAAQS, such as the 8-hour ozone NAAQS. Operating data for the 2017 ozone season appears to reinforce Delaware's position.

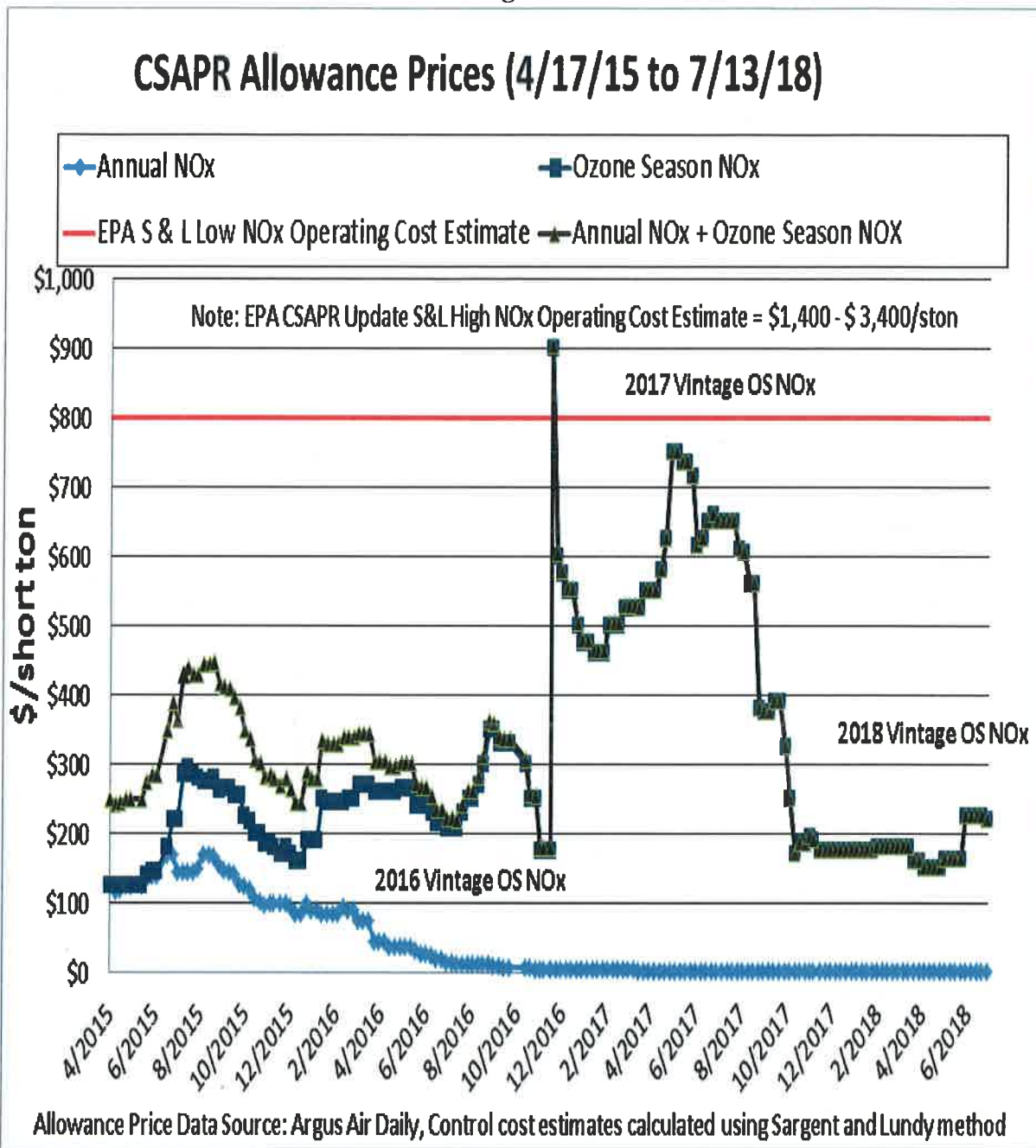
Increased Use of Gas Fuel and Fuel Conversions Contribute to Decreased Compliance Allowance Costs

In its proposed denial of Delaware's 126(b) petitions, the EPA cited the economics of allowance costs as providing incentive for subject facilities to operate NO_x controls or switch to lower emitting fuels. In its proposed denial of Delaware's 126(b) petitions, the EPA indicates, "Under the CSAPR Update, each ton of NO_x emitted by a covered EGU has an economic value—either a direct cost in the case that a power plant must purchase an allowance to cover that ton of emissions for CSAPR Update compliance or an opportunity cost in the case that a power plant must use an allowance in its account for compliance and, thereby, foregoes the opportunity to sell that allowance on the market." However, as some facilities reduce their NO_x emissions either through the operation of controls or fuel switching, fewer total allowances will be required for end-of-season true-up. This will result in a greater number of allowances on the market and due to market forces, the likely reduction cost of acquiring allowances on the market. As allowance prices decline, the financial incentive for those who have a choice of running controls or purchasing compliance allowances will tend to shift toward the purchase of compliance allowances.

Information available to date indicates that even at current allowance market prices, CSAPRU seasonal NO_x allowances are valued far below estimated NO_x reduction costs. For example, rough estimates for the cost of coal fired EGU SCR reagent consumption range from \$400 - \$500 per ton of NO_x reduced. This range of cost was developed using the information presented in the EPA's document "IPM Model – Updates to Cost and Performance for APC Technologies ACR Cost Development Methodology" (https://www.epa.gov/sites/production/files/2018-05/documents/attachment_5-3_scr_cost_development_methodology.pdf). Note that this range of values does not include additional SCR NO_x control O&M costs such as reagent dispersant, pumping and heating costs, and additional fan power cost (assuming SCR bypass capability) which will tend to increase the overall operating cost.

As shown in the Figure 2 below, the market cost of allowances continues to track far below the actual cost of NO_x reduction using existing SCR controls of coal-fired EGUs.

Figure 2



Such conditions are similar to those that served to facilitate coal-fired SCR equipped EGU owner/operators to decide to idle the SCR controls during previous ozone seasons while remaining in compliance with earlier ozone season NOx cap-and-trade programs; it was advantageous to comply with the seasonal NOx programs through obtaining sufficient allowances and running NOx controls at low removal efficiencies or not running them at

all. This created the situation where the Conemaugh, Harrison, and Homer City EGU facilities chose to not operate their previously installed SCR controls in accordance with good pollution control practices and thereby continued to significantly impact Delaware's air quality. These same conditions allowed the Brunner Island owner/operators to decide to not install SCR controls on their coal-fired EGUs, and thereby also continue to significantly impact Delaware's air quality.

Therefore, it does not seem reasonable to assume that the market/pricing aspects of the CSAPRU seasonal NOx control program will be the driving force to achieve low NOx emission rates from SCR-equipped coal-fired EGUs well into the future. As allowances continue to be available at reasonable prices, it seems likely that sources will opt for the cost-effective compliance strategy of acquiring allowances rather than operate at their lowest achievable NOx emission rate. And the flexibility of the market has no provision to ensure that upwind units with the capability to significantly impact downwind air quality are prohibited from increasing their NOx emissions to those units' optimal compliance level.

Delaware Continues To Experience Ozone Exceedances after CSAPRU and Supportive Fuel Gas Market Economics

During the 2017 ozone season, monitors in New Castle County, Delaware continued to measure ambient ozone at levels exceeding the 2015 ozone standard. Ambient ozone data from the design value monitor in New Castle County is included in Table 6 below.

Table 6
Air Quality Data for Delaware's Brandywine Monitor

Agency	Site Name	AQ5 Code	Fourth Highest (ppm)				Design Values (ppm)	
			2014	2015	2016	2017	2014-16	2015-17
DE1	BCSP	100031010	0.074	0.071	0.078	0.074	0.074	0.074

The 2017 ambient ozone value shown in Table 6 was obviously recorded after the start of the CSAPRU ozone season NOx program and during the still-current period of favorable fuel gas economics. These are the programs and conditions cited in EPA's proposed denial of Delaware's 126(b) petitions as effectively satisfying the EPA's obligations in accordance with the provisions of the CAA. Additionally, it can be seen in Table 6 that the 2017 ozone season fourth highest ozone value at this monitor is not showing significant improvement from the 2014 and 2015 values, although there is some improvement shown relative to the 2016 ozone season.

Delaware's ambient ozone monitors continue to record high ozone levels during the 2018 ozone season. Data showing high levels of ozone recorded to date for the 2018 ozone season are shown in Table 7 below.

Table 7
Preliminary 2018 Air Quality Data Showing Exceedances of the 2015 Ozone NAAQS
At Delaware Monitors

Agency	Site Name	County	AQS Code	5/1/2018	5/2/2018	6/18/2018	6/30/2018	7/3/2018	7/9/2018	7/10/2018	7/11/2018
DE1	BCSP	New Castle	100031010	69	65	76	65	69	64	79	48
DE1	BELLFNT2	New Castle	100031013	74	72		64	65	73	85	54
DE1	KILLENS	Kent	100010002	75	70	63	65	59	59	80	63
DE1	LEWES	Sussex	100051003	74	68	55	71	47	48	67	72
DE1	LUMS 2	New Castle	100031007	74	74	71	66	63	68	77	56
DE1	MLK	New Castle	100032004	69	71	68	70	72	72	78	49
DE1	SEAFORD	Sussex	100051002	74	68	57	67	55	56	82	66

It can be seen in the preliminary air quality data in Table 7 above that during the 2018 ozone season, through July 11, Delaware has experienced eight days of exceedance of the 2015 ozone NAAQS, but no individual site has exceeded the 2015 NAAQS on each of those days. To date, ozone monitors at the MLK, Lums, and Bellefonte locations have each measured four days exceeding the 2015 ozone NAAQS. The information in the above table also indicates that the 2008 ozone NAAQS was exceeded on two separate days (6/18/18 and 7/10/18). It can also be seen in the table above that on 7/10/18 ambient ozone was measured at the Bellefonte site at 85ppb, exceeding the 1997 ozone NAAQS.

Table 8 below shows the ozone design values for three of New Castle County, Delaware's ozone monitoring sites. The data reflects values for 2014-2016 and 2015-2017, and projected values for 2016-2018 using 2018 ozone season to date monitoring data.

Table 8
4th Highest 8-Hour Ozone Averages and 3-Year Design Values,
For Three Monitors in New Castle County, Delaware

AQS Site ID	Local Site Name	2014	2015	2016	2017	2018 (through 7/14/18)	DV 2014-2016	DV 2015-2017	DV 2016-2018
100031010	BCSP	0.074	0.071	0.073	0.074	0.069	0.074	0.074	0.073
100031013	BELLFNT2	0.069	0.069	0.074	0.07	0.072	0.070	0.071	0.072
100032004	MLK	0.068	0.072	0.073	0.071	0.072	0.071	0.072	0.071

The data in Table 8 indicates that, based on ambient ozone values measured to date, New Castle County, Delaware will continue to exceed the 2015 ozone NAAQS for the 2016-2018 period. The data in the above table, including design values projected out to the 2016-2018 period using data recorded to date, also indicates there has been no improvement in the ambient ozone design value over the last three periods.

This information is an additional indication that the EPA's confidence that the CSAPRU ozone season NOx program, which began in 2017, combined with favorable fuel gas economics will address Delaware's ambient ozone issues may be overly optimistic.

Cap-and-Trade Programs Do Not Provide Required Specific Emission Rates or Mass Emissions Limitations for Any Given Unit or Facility

The EPA indicated that the development of the CSARU seasonal NOx program included the identification of upwind emissions, on a state-wide basis, that significantly contribute to downwind nonattainment or interfere with maintenance of the 8-hour ozone standard and implemented a regional emissions allowance trading program to reduce the identified emissions. The CSAPRU was developed as a result of regional analysis and the collective contribution of upwind states to downwind air quality problems. EGUs in states subject to the CSAPRU ozone season NOx control program are required to comply with the program requirements by participating in the CSAPRU's NOx cap-and-trade program. Because the CSAPRU focuses on "linked" states and downwind nonattainment, or interference with maintenance, the program does not adequately address the potential impact of the emissions from individual EGUs or EGU facilities.

EPA's use of linked states and downwind air quality impact focuses on the impact of the total emissions from the upwind state, with little regard to the distribution of the emissions in the

upwind state or meteorological conditions other than those used in the particular model. But in the real world, EGU facility emissions may vary from day to day and hour to hour, as do meteorological conditions. These variables, singly or combined, can greatly affect the impact of the particular EGU or EGU facility on downwind air quality on any given day.

For individual EGUs or EGU facilities, the CSAPRU seasonal NOx program specifies seasonal compliance as the ability to surrender a sufficient number of compliance allowances to match the number of tons of NOx actually emitted by the unit or facility during the ozone season. By design, the CSAPRU provides the unit/facility owner/operator flexibility with regards to program compliance cost. The owner/operator may choose to reduce the number of required compliance allowances for any given level of generation by managing the subject unit's NOx emissions (installation and operation of various levels of NOx controls, fuel switching), which tends to result in reduced NOx emissions loading to the atmosphere from that particular unit. The owner/operator may decide to make no physical changes to the subject unit or its operation (no change in actual NOx emissions) and comply with the CSAPRU ozone season NOx program by acquiring the appropriate number of compliance allowances for surrender. The provisions of the program also offer the owner/operator the ability to comply with some combination of actual emissions reduction and acquisition of additional compliance allowances.

Because each subject unit owner/operator is provided the same flexibility under the CSAPRU seasonal NOx program, the decision to utilize full NOx emission reduction capability, partial NOx reduction capability, or no NOx reduction effort at all can be an acceptable compliance strategy for any unit/facility at any given period in time. Therefore, if a specific EGU or EGU facility has been shown to significantly impact downwind air quality in the past, the seasonal allowance trading aspects of the CSAPRU provide no absolute assurance that the specific unit could not significantly impact downwind air quality at the same downwind location after CSAPRU implementation under the same meteorological conditions.

Only emission limitations of sufficient stringency and averaging periods appropriate to the air quality standard, as applicable to the subject EGU or EGU facility, can positively prevent the EGU or EGU facility from emitting at levels previously demonstrated to significantly impact downwind air quality on any particular day or set of meteorological conditions. A cap-and-trade program, by itself, cannot ensure that any given facility, shown to have the capability of significantly impacting downwind air quality, will not continue to significantly impact downwind air quality at any time atmospheric conditions are conducive to the effect. The EPA's reliance on cap-and-trade ozone season NOx programs does not address the relief requested in Delaware's 126(b) petitions to ensure that the Conemaugh, Harrison, and Homer City EGU facilities do not continue to have the potential to significantly impact Delaware's ambient air quality in the future.

Conclusion

The EPA has proposed the denial of Delaware's 126(b) petitions indicating that the provisions of the CSAPRU ozone season NOx program and the existing (and predicted future) fuel gas market economics address Delaware's concerns that NOx emissions from the Brunner Island, Conemaugh, Harrison, and Homer City electric generating facilities emit NOx at levels to significantly impact Delaware's ambient ozone and impacts Delaware's compliance with the 2015 ozone NAAQS. It is EPA's position that the provisions of the CSAPRU ozone season NOx program and the fuel market economics will result in Delaware's compliance with the 2015 8-hour ozone standard by 2023. However, 2017 ambient ozone monitoring data in New Castle County, Delaware has shown continued ozone exceedance after the initiation of the CSAPRU ozone season program and during a period of favorable gas fuel market economics. As discussed above, Delaware does not agree with the EPA's analysis or EPA's proposed denial. The information and justification presented in EPA's proposed denial does not identify any provision of the CSAPRU or fuel market economics that provides positive assurance that NOx emissions from the Brunner Island, Conemaugh, Harrison, or Homer City electric generating stations will not significantly impact Delaware's air quality in the future. The EPA has determined that New Castle County, Delaware is not in compliance with the 2015 ozone NAAQS. And 2017 ozone season ambient ozone measurements and early 2018 ozone season ambient ozone measurement indicate that New Castle County, Delaware is likely to remain in nonattainment with the standard. Therefore, it is Delaware's position that the EPA does not have adequate justification to deny Delaware's 126(b) petitions, and requests EPA to take action in accordance with the provisions of the Clean Air Act to help Delaware achieve compliance with the 2015 ozone standard and improve the air quality for Delaware's citizens.

